



Safety Management Update at CERN for DOE/NSF U.S. LHC Program

February 21, 2005

U.S. LHC Project Office

Pepin Carolan





Outline



- U.S. LHC Program/Project
- Organizations Involved
- Internat'l Agreement & CERN Safety Role
- Motivation for this meeting
- Safety Priority
- Overview/Update on SLAC accident
- Looking Forward

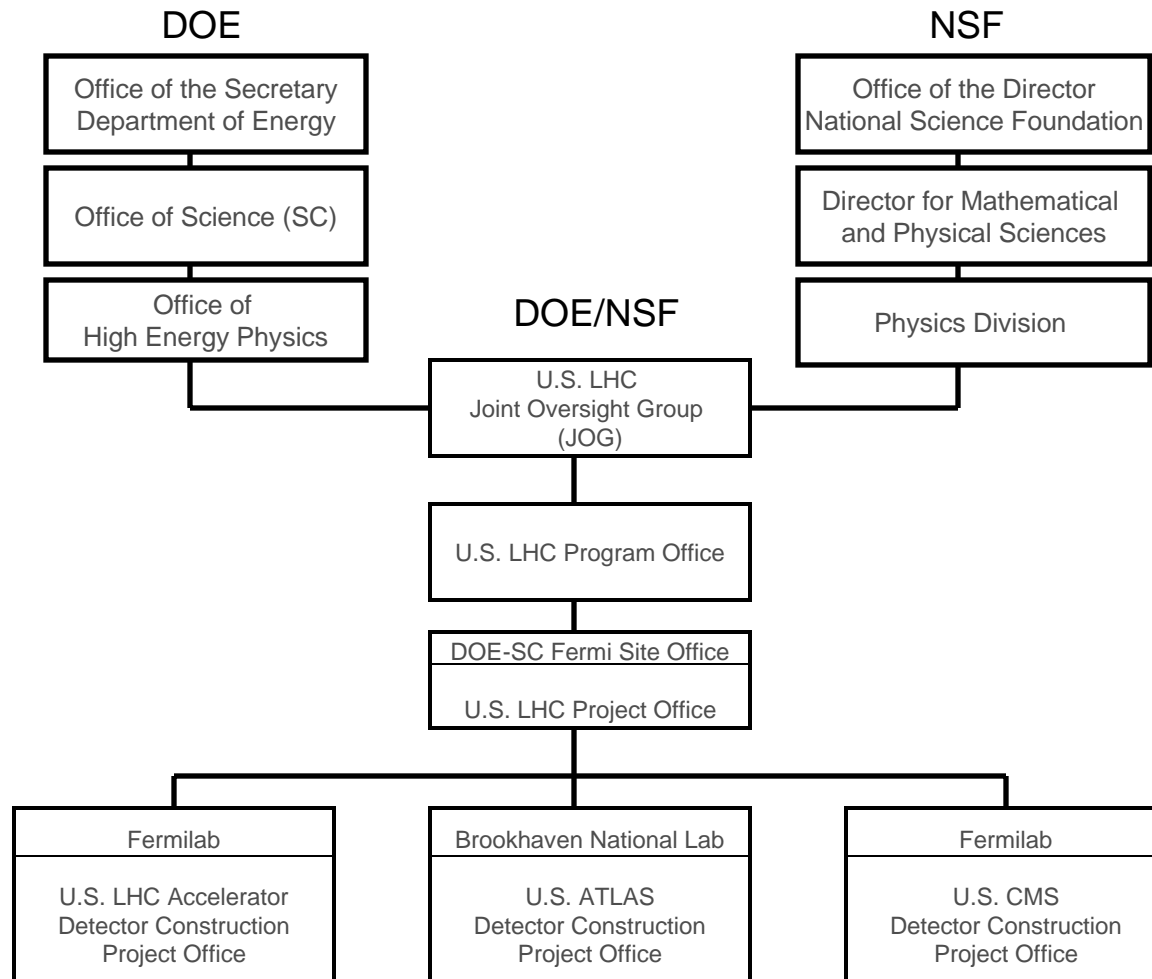




U.S. LHC Program/Project



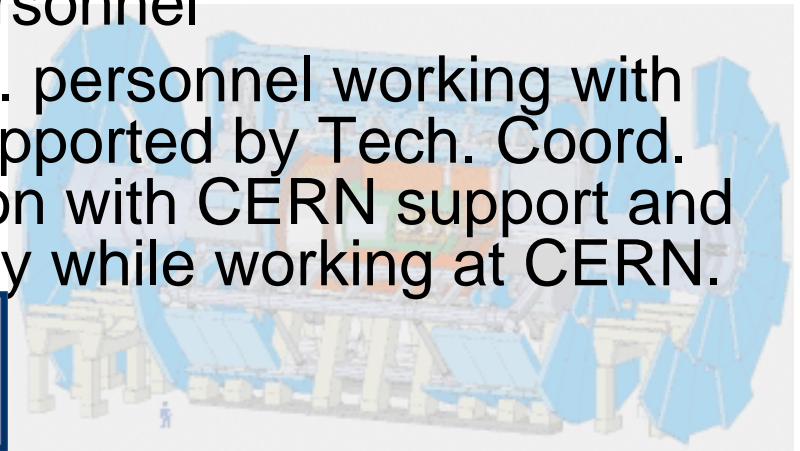
U.S. LHC Construction Project Organization





Organizations Involved

- U.S. CMS & U.S. ATLAS are responsible for managing the U.S. LHC construction projects & research programs and reporting to Agencies (cost, schedule, technical,...)
- U.S. supported personnel at CERN working on detector construction/M&O may report both through the U.S. management AND through the international collaboration management structure (Subsystem Project Leaders, etc..)
- Agencies rely on BOTH lines to set and communicate safety expectations to U.S. personnel
- Agencies primarily rely on U.S. personnel working with collaboration management, supported by Tech. Coord. and GLIMOS and in conjunction with CERN support and oversight, to ensure their safety while working at CERN.





CERN's Role

- International Cooperation Agreement on LHC (DOE/NSF-CERN)

The Parties shall use their best efforts to ensure that their personnel, including personnel of the U.S. participants, when working under this Agreement, shall conform to the rules for conduct and safety in force in the institution where the work is performed, and shall be placed under the institution's authority in this respect.

– Experiments Protocol

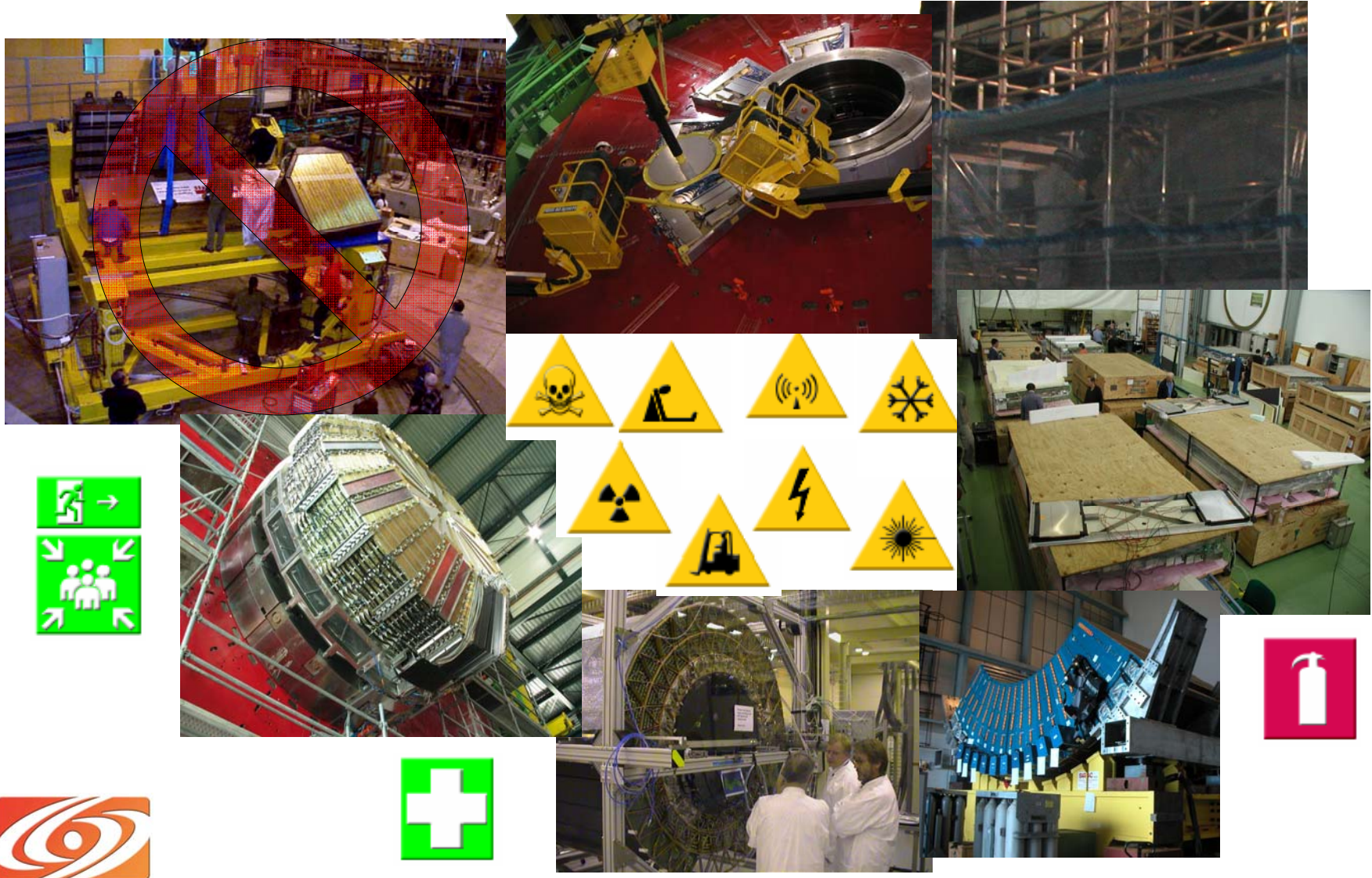
The Technical Co-ordinators of the ATLAS and CMS Collaborations shall be CERN staff members, and shall have overall responsibility for technical aspects of detector construction. Their responsibilities shall include integration of the subdetectors, safety, infrastructure at CERN, surface and experimental areas, services, installation, machine interface, and test beams.

- U.S. needs to do its part!





Motivation for this meeting





This Meeting...

- General Update for Agencies as to safety management organizations/systems of CERN/ATLAS/CMS
 - Recent changes? How is it going generally with respect to safety for detector construction/installation/pre-ops?
- Questions for U.S. personnel/ATLAS/CMS
 - Satisfactory work planning/hazards mitigation for installation/testing work? Adequate support/resources for safety?
 - Adequate safety orientation/training of collaborators, foreigners?
 - Sufficient mutual coordination/communications/support between U.S./Collaboration/CERN personnel on safety?
- All Parties : aware of any significant safety management concerns that need further attention?





Reminder of past discussion



March, 2002 meeting (CERN/ CMS/ ATLAS/ US CMS/ US ATLAS) :

- Many points raised, could things be improved?
 - Understanding supervisory, oversight responsibilities for specific installation/commissioning jobs (e.g. CERN vs US)
 - Formalizing work planning procedures as needed to evaluate, mitigate job hazards (e.g. SSHPP); obtain all TIS/GLIMOS approvals needed
 - U.S must ensure training, safety awareness, control and integration of newly arriving U.S. personnel
 - Training/following of CERN LOTO procedures as needed
- Other items: INB compliance; Emergency Response to remote/underground locations; Electrical Safety
- U.S. CMS/ATLAS management assures points reviewed





Since that time

- Number of U.S. personnel working at CERN has increased
 - more work; greater complexity; tighter schedules...
- U.S. personnel have continued to work at CERN with no significant accidents/injuries!! Good work by all → U.S./CMS/ATLAS/CERN
- CERN Hoisting/Rigging accident resulted in equipment damage (latest the Muon chambers @ B180) → no hazard posed to personnel
 - Can discuss more later
- Not every place has fared so well...





SLAC Electrical Accident-Oct. '04



- Subcontractor electrician was seriously burned from an explosive arc flash while installing a circuit breaker in an energized 480 v panel → DEEMED PREVENTABLE
 - Proper permitting procedures not followed; working on panel while energized not justified- *should have been a Lockout-Tagout (LOTO) job*
 - Unsafe work was not stopped by at least two others with direct interaction and safety knowledge concerning the job
 - Inadequate Personal Protective Equipment (PPE)
 - No eye/face shield, no properly insulated gloves/tools, no coveralls
- SLAC had previously identified problems in related areas
 - PPE; breakdown in planning/execution of “hot” work on energized systems (23/31 energized work permits lacked proper justification)
 - SLAC was in process of implementing corrective actions

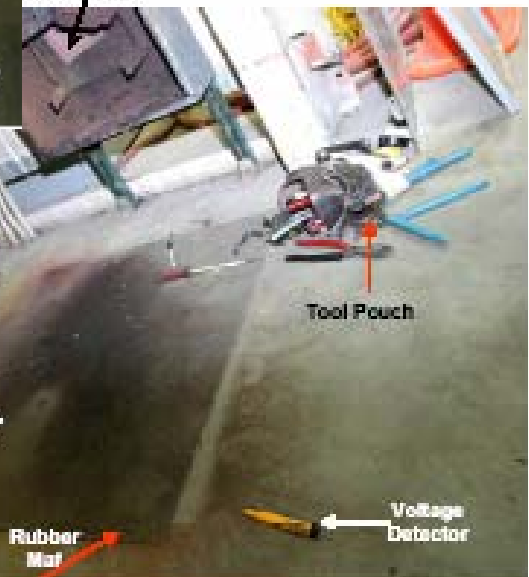




SLAC Electrical Accident



Panel 4P20R





SLAC Electrical Accident Impact



- Major DOE ES&H Investigation
- All SLAC Operations Shutdown
- Deep impact on Worker/Institution/Management/Program
- Brief Update:
 - SLAC Corrective Action Plan provided to DOE SC-1 for approval
 - SLAC Director chartered re-start team
 - Team did comprehensive facilities walkthrough/assessment process.
 - Facilities, management systems, paper/administrative controls, safety documentation & training all verified.
 - SLAC Director expected to approve restart of Linac/PepII/BABAR Feb. 24



U.S. Department of Energy
Office of Environment, Safety and Health

Type A Accident Investigation



Electrical Arc Injury
on October 11, 2004, at the
Stanford Linear Accelerator Center,
Menlo Park, California

November 2004



General Lessons from SLAC Accident



- It is crucial that responsible supervisors in the field (i.e. where work is done) have enough cognizance and control over the work in their areas or systems to ensure against some subcontractor or other worker undertaking a job *with no regard for reasonable precautions or protective measures*, and in a manner that would egregiously *violate the requirements and procedures put in place* by the organization to protect everyone.
- With regard to the SLAC accident, this is particularly important in relation to potential electrical “hot work”, jobs involving use of personal protective equipment, and Lock-Out/Tag-Out requirements.
- This level of control must be maintained by the management and workers, even in the face of significant operational or schedule pressures, with a clear message to those doing work that **safety comes before operations and meeting schedule.**





Safety Priority

- Safety of personnel and protection of the environment is of the highest priority for all DOE operations
 - Re-iterated in address by incoming DOE Secretary
- DOE Office of Science Director consistently emphasizes safety, with great interest
- DOE/NSF management have communicated safety expectations through the U.S. LHC Program to U.S. personnel in this program.
- CERN DG has emphasized safety to all personnel working at CERN (most recently in Jan. '05 talk)





Looking Forward

- Numbers of U.S. personnel working at CERN ramping up in next few years.
- U.S. personnel need to be as knowledgeable and comfortable (or more so) with CERN's work environment and requirements as when working at any National Laboratory.
 - Language barriers, cultural differences, etc...that may impact safety must be dealt with directly, constructively
 - Logistics with day-to-day work poses constant challenge
- Can't cut corners on safety; Must all continue to look out for each other, maintain vigilance, promote positive safety culture.





A Lighter Moment? Not really...



Man Tries to Toss Cigarette, SUV Ignites

February 18, 2005 8:04 AM EST

SAN FRANCISCO - A man barely escaped serious injury Thursday after a lit cigarette he tried to toss out the window while driving across the Bay Bridge blew back in and ignited the vehicle, according to the California Highway Patrol.

The unidentified man was driving westbound at about 10:40 a.m. when he tossed the cigarette out the window of his Ford Expedition, said CHP Officer Shawn Chase.

Carried by the wind, the cigarette landed in his back seat and almost immediately burst into flames. **The man quickly pulled to the side of the road, and leapt from the flame-filled SUV, which continued rolling into a guard rail**, Chase said.

"He thought he had thrown it in park, but he didn't and it just kept going," the officer said. "It was in flames by the time he got out. **He had some of his hair singed on the back of his head. It burnt down to the frame. There was nothing left.**"

The incident forced the closure of the Harrison Street off-ramp and one lane of traffic flowing into the city for about an hour.

He said the man will likely face a **misdemeanor charge for littering.**

"We see people throwing cigarettes out the window all the time but never a situation like this where it comes back in," Chase said. **"This guy was lucky."**

